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| SERIAL NUMBER | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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08/094,854 07/20/93 ANDERSON

C2M1/1031

FLYNN, THIEL, BOUTELL & TANIS
2026 RAMBLING ROAD
KALAMAZOO, MI 49008

EXAMINER
KNAPP, J

ART UNIT PAPER NUMBER

3205

DATE MAILED:

10/31/94

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☒ Responsive to communication filed on 15 AUG 94 ☒ This action is made final.

A shortened statutory period for response to this action is set to expire THREE month(s), days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice of Draftsman's Patent Drawing Review, PTO-948. |
| 3. <input type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, PTO-152. |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> _____ |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-4, 6, 8, 9, 11, 12, 14-16, 18-26 are pending in the application.

Of the above, claims _____ are withdrawn from consideration.

2. ☒ Claims 5, 7, 10, 13, 17 have been cancelled.

3. ☐ Claims _____ are allowed.

4. ☒ Claims 1-4, 6, 8, 9, 11, 12, 14-16, 18-26 are rejected.

5. ☐ Claims _____ are objected to.

6. ☐ Claims _____ are subject to restriction or election requirement.

7. ☒ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.

8. ☐ Formal drawings are required in response to this Office action.

9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).

10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).

11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).

12. ☐ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.

13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.

14. ☐ Other

EXAMINER'S ACTION

Art Unit 325

1. Claim 21 is rejected under 35 U.S.C. § 112, fourth paragraph, as being of improper dependent form for failing to further limit the subject matter of a previous claim. The subject matter of claim 21 has been incorporated into claim 20 by the current amendment.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Claims 1, 4, 6, 9, 12, 16, 19, 20, 21, 23-26 are rejected under 35 U.S.C. § 102(b) as being anticipated by Ferriere et al. (U.S. 1,437,641).

See lines 79-82. The compositional range given inherently includes at least one composition with the melting range and phase distribution claimed in claims 6, 12, 20, and 21. Further, in regard to claims 20 and 25, 4.5% Ag is about 4.7% Ag.

Note that claiming that the solder is an "electrical conductor solder" is merely a statement of the intended use of the solder. As such that statement is given little or no patentable weight.

5. Claim 18 and 22 are rejected under 35 U.S.C. § 103 as being unpatentable over Ferriere et al.

Ferriere et al. teaches the invention substantially as claimed (example given at lines 69-74) except that Ferriere et al. uses 86% Sn instead of at least about 89% Sn as required by the claim. However, based upon a need to match the properties of the solder with those of the electrical conductors being soldered, it would have been an obvious matter of design choice to use a solder with at least 89% Sn rather than one with 86% Sn since no stated problem is solved. In Re Kuhle, 188 USPQ 7. Furthermore, it is well known to employ conductors that are comprised of Al or Al alloys, and Ferriere et al. broadly claims a solder for Al and its alloys that includes 85-95% Sn.

6. Claims 6, 11, 12, 14, 19, 20, 21, 23-26 are rejected under 35 U.S.C. § 102(b) as being anticipated by Mizuhara (U.S. 4,643,875). See section No. 5 of paper No. 5.

7. Claims 2, 3, 8, 14, 15 are rejected under 35 U.S.C. § 103 as being unpatentable over Ferriere et al. in view of Naton (U.S. 4,879,096).

Ferriere et al. teaches the addition of Bi to a solder composition in order to increase the fluidity of a solder (lines 46-48) but does not specifically teach the inclusion of up to 10 wt% Bi in the solder. However, Naton teaches (col. 2 (9-32)) the addition of 0.1 to 3 wt% Bi to a Pb-Free Sn-Ag-Cu solder to increase the stress rupture point and creep strength of the solder and to lower the melting point of the solder. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ferriere et al. with Naton to specifically include 0.1 to 3 wt% Bi in the solder to improve the mechanical behavior of the solder, to lower its melting point, and to increase its fluidity when molten.

8. Claims 2, 3, 8, 15 are rejected under 35 U.S.C. § 103 as being unpatentable over Mizuhara in view of Naton.

See section No. 8 of paper No. 5.

9. Claims 23, 24 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

These claims are vague and indefinite because they are all include improper Markush groups. They claim a composition "consisting of...and the balance essentially Sn". It is not clear if the claim is limited to a composition with only the claimed constituents or if other constituents that do not substantially alter the characteristics of the alloy may be included. The claim has been treated as if the latter is the case.

10. Applicant's arguments filed 15 Aug 1994 have been fully considered but they are not deemed to be persuasive.

Arguments not addressed in the rejections will now be discussed. As to the arguments to the fact that a broader range is disclosed by the reference than that claimed, the important point is that the claimed composition falls within the range and is therefore anticipated by that range. Further, such a composition would inherently behave in the fashion claimed. In regard to arguments directed specifically to Mizuhara, that brazing is performed in a vacuum is beyond the scope of the claimed subject matter, not all compositions require Ni to be

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present (column 1, lines 36-40), and neither the claims or specification of the instant application preclude the use of Ti, V, and/or Zr as solder alloying ingredients.

Note that none of applicant claims totally preclude other alloying ingredients than those claimed. The solder either "comprises", "consists essentially of," or "consists of...and the balance essentially Sn."

The rejections based upon JA 42-18219, which requires Pb as an alloy ingredient, have been withdrawn.

11. Applicant's amendment necessitated the new grounds of rejection. Accordingly, **THIS ACTION IS MADE FINAL**. See M.P.E.P. § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

12. Any inquiry concerning this communication should be directed to J. Knapp at telephone number (703) 308-0667.

JSK
Knapp/msm
October 19, 1994

P. Austin Bradley
P. AUSTIN BRADLEY
SUPERVISORY PATENT EXAMINER
GROUP 3200